

element bag portions E13 to E17 are arranged at positions corresponding to the icon images of the cross key and the like.

[0229] In this embodiment, the upper portion of the base member 106 is sealed in (covered) by a film portion 5 for a sheet shaped lid in order to improve the air-tightness. As the film portion 5, there is used a transparent material with transmissivity and a refractive index which is approximately equal to the transmissivity and refractive index of the base member 101. For example, a zeonor (trademark) of the film thickness of around 25 [μ m] is used. The hardness thereof is around 20° to 40°. In this manner, the seventeen element bag portions E1 to E17 are constituted of the base member 106 and the film portion 5.

[0230] An air-circulation unit 3A as shown in FIG. 25A is connected to the above-mentioned seven flow channels 2a, 2d to 2i of the three layered touch-sensitive variable sheet units 141 to 143. FIGS. 25A and 25B show an air supply example in the input device 400. The input device 400 shown in FIG. 25A includes the display unit 29, the input detection unit 45, the layered sheet unit 140 and the air-circulation unit 3A. The air-circulation unit 3A operates so as to send air to the flow channels 2d to 2h of the touch-sensitive variable sheet unit 141 of the first layer, the flow channel 2i of the touch-sensitive variable sheet unit 142 of the second layer or the flow channel 2a of the touch-sensitive variable sheet unit 143 of the third layer. In this embodiment, the air-circulation unit 3A has a programmable function for sending the air to the three layered touch-sensitive variable sheet units 141 to 143, for every layer, which constitute the layered sheet unit 140. Also in this embodiment, for the air-circulation unit 3A, the blower 3b (air pressure generator) using a piezoelectric device is used.

[0231] FIG. 25B is a plan view of the touch-sensitive variable sheet unit 142 of the second layer of the input device 400 and a valve changeover unit 308 for the second layer in a flow channel changeover unit 3A for showing configurations thereof. The air-circulation unit 3A shown in FIG. 25B includes the flow channel changeover unit 3a1 and the blower 3b. The blower 3b having the piezoelectric unit 315 is used. The blower 3b is connected to the seven flow channels 2a, 2d to 2i through the flow channel changeover unit 3a1 as shown in FIG. 25B.

[0232] The blower 3b sends compressed air to the element bag portion array E100 of the touch-sensitive variable sheet unit 141 through the flow channel changeover unit 3a1 and the five flow channels 2d to 2h, sends compressed air to the twenty element bag portions E41 to E60 of the touch-sensitive variable sheet unit 142 through the flow channel changeover unit 3a1 and the flow channel 2i and sends compressed air to the seventeen element bag portions E1 to E17 of the touch-sensitive variable sheet unit 143 through the flow channel changeover unit 3a1 and the flow channel 2a.

[0233] The flow channel changeover unit 3a1 includes a valve core portion 301A, valve changeover units 302, 308, 319, valve bodies 304, 309, 322 and the like. The valve core portion 301A has, for example, a rectangular sectional shape and is composed of a core member in which a resin or a light metal is molded by a die.

[0234] The valve changeover units 302, 308, 319 each having a fan shape are provided in the valve core portion 301A. An air-intake tube 324 which communicates to the blower 3b is provided on the valve changeover units 302, 308, 319 and takes air therein from the blower 3b. The valve changeover unit 302 contains the valve body 304 and the air-exhaust port 306. The valve body 304 operates so as to shut off or so as to

open the air-exhaust port 306 by obtaining the drive-power of the driving unit 3c1 of a motor, a solenoid or the like. The air-exhaust port 306 communicates to the flow channel 2a. The driving unit 3c1 is provided, for example, on the rear surface side of the valve core portion 301A.

[0235] The valve changeover unit 308 contains the valve body 309 and an air-exhaust port 310. The valve body 309 operates so as to shut off or so as to open the air-exhaust port 310 by obtaining the drive-power of the driving unit 3c1. The air-exhaust port 310 communicates to the flow channel 2i.

[0236] The valve changeover unit 319 contains the valve body 322 and an air-exhaust port 323. The valve body 322 operates so as to shut off or so as to open the air-exhaust port 323 by obtaining the drive-power of the driving unit 3c1. The air-exhaust port 323 communicates to the flow channels 2d to 2h. As each of the valve bodies 304, 309, 322, a plate rubber sheet member having a long oval shape is used. It should be noted that members having the same name and numeral as those of the first embodiment have the same functions as those of the first embodiment, so that the explanation thereof will be omitted.

[0237] In the embodiment, when the valve body 304 is opened through the driving unit 3c, the air supplied from the blower 3b is introduced to the seventeen element bag portions E1 to E17 of the touch-sensitive variable sheet unit 143 by passing through the air-exhaust port 306 and the flow channel 2a.

[0238] When the valve body 309 is opened, the air supplied from the blower 3b is introduced to the twenty pieces of the element bag portions E41 to E52 (referred to as FIG. 24) and the element bag portions E53 to E60 of the touch-sensitive variable sheet unit 142 by passing through the air-exhaust port 310 and the flow channel 2i. Further, when the valve body 322 is opened, the air supplied from the blower 3b is introduced to the element bag portion array E100 (referred to as FIG. 24) and the element bag portions E53 to E60 of the touch-sensitive variable sheet unit 141 by passing through the air-exhaust port 323 and the flow channels 2d to 2h. It should be noted that when the valve bodies 304, 309, 322 are shut off at the same time, the air supply to all of the element bag portions E1 to E17, the element bag portions E41 to E60 and the element bag portion array E100 of the layered sheet unit 140 stops.

[0239] Accordingly, it is possible to constitute the programmable air-circulation unit 3A for sending the air to the flow channels 2d to 2h of the touch-sensitive variable sheet unit 141 of the first layer, the flow channel 2i of the touch-sensitive variable sheet unit 142 of the second layer or the flow channel 2a of the touch-sensitive variable sheet unit 143 of the third layer. This enables the element bag portions E1 to E17, the element bag portions E41 to E60 or the element bag portion array E100 and the like to be filled up with the air supplied from the air-circulation unit 3A by passing through the flow channels 2a, 2d to 2i in the input device 400 shown in FIG. 24.

[0240] FIGS. 26A to 26C show display examples of operation panel images in mobile phones 710, in each of which the input device 400 is mounted. The mobile phone 710 shown in FIG. 26A is used in the vertically wide manner and according to the mobile phone 710, the key K1 of numeral "1" to the key K10 of numeral "0", the key K11 of symbol "*", the key K12 of symbol "#" or the like, the key K13 of determination "O" of the cross key, the left facing arrow key K14 thereof, the upward facing arrow key K15 thereof, the right facing arrow